

# Methodological Framework and Application Integration Services in Enterprise Information Systems

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## INTRODUCTION

For integration of two business functions or two business systems it is necessary to connect their business processes with application support and data exchange. Processes appertaining to one application system create data which will be used by another application system.

First, and the key reason for the integration of business systems' applications, are user business needs for business processes and information flow, and changes in business processes occurring during business transactions.

The next integration reason is related to the technological differences by means of which applications are constructed. Integration should be carried out to connect technologically different applications. Because of process complexity which includes breakdown of the existing business processes and applications, business processes change on the basis of business needs and user requirements, modeling of such processes, and new applications and their connection, it is necessary to shape methodological framework. The use of this framework should result in the successful completion of EAI projects.

## EAI Short History

Applications have been developed on the basis of business system function architecture (for example automation of production, procurement, sales, and so forth, functions, that is, applications for their support. EAI related requirements also appear with business

combinations—integration of business subjects into a whole (fusion, consolidation, acquisition). In such cases, information systems applications of the subjects which are going to be merged are integrated. From the early sixties to the late seventies of the last century, business systems applications were simple in design and functionality (Gormly, 2002). Business system data integration was not considered at all, as the aim was to support manual procedures by PC. During the eighties the necessity of integration applications within business systems was recognized. There were attempts to redesign existing applications to make them suitable for integration. Since the nineties, enterprise resource planning (ERP) applications have prevailed, and the existing applications and data were adjusted to the ERP system. The aforesaid could be done only through EAI introduction as a logical sequence of events. Later on, the advantages of integration of multiple business processes through existing applications have been conceived. Other factors which have contributed to the EAI development include growth of applications intended for supply chain management (SCM) support and business to business integration (B2B), and applications for modern business processes support and Web application integration. Modern business requires a process centric approach, that is, end-to-end (E2E) management and control of business system. The process includes various applications intended for the support of different business processes and functions.

Gormly (2002) states that “EAI is very involved and complex, and incorporates every level of an enterprise system: its architecture, hardware, software and processes” (p. 1).

## **BUSINESS PROCESS INTEGRATION**

The history of information systems development was driven by business systems' functions automation and mergers and acquisitions - integration of business subjects into a whole. Modern business requires business processes integration through their dynamics, and thus enterprise application integration (EAI) as well. In this connection, it is necessary to find ways and means of application integration and interaction in a consistent and reliable way. The real-time enterprise (RTE) monitors capture and analyse root causes and overt events that are critical to its success the instant those events occur (McGee, 2004, p. 2). EAI is determined by business needs and business requirements. EAI has to be founded on business process repository and models, business integration methodology (BIM), and information flow as well. Business process models are the strongest conceptual resource to store and share knowledge (Vidović & Galinec, 2003, p. 3). Decisions concerning technology must be done to enable successful application integration. In this article, EAI methodological framework and technological concepts for its achievements are introduced.

### **Real-Time Enterprise**

Use of information is a key to the real-time enterprise (RTE) to identify new opportunities, avoid mishaps, and minimize delays in core business processes. The RTE will then exploit that information to progressively remove delays in the management and execution of its critical business processes (McGee, 2004, p. 2). This is based on the contention that there is always prior warning before every major favorable or unfavorable business surprise. Critical business processes are those of high value and importance for the business system, the improvement of which will significantly affect the business result (McGee, 2004). Real-time enterprise is driven by simple or complex events (Schulte, 2002).

### **Process Models**

Process models enable business analysts and system architects to work together and establish event-driven and service-oriented architectural styles in composite business applications (Thompson, 2004, p. 1). Business systems that use business process models will have more success in designing and implementing efficient

and effective business processes. To accomplish this, business analysts should be well-versed in creating business models that explicitly identify events, and they should understand the concept of services and event handlers. Thompson (2004, p. 2) states that systems' architects should be capable of interpreting business process models and establishing application architectures with service-oriented and event-driven styles that trace back to the requirements specified in those models" (Thompson, 2004, p. 2). Business systems' focus should be on implementing a solid service foundation based on carefully designed service architecture. Once in place, business process orchestration can enable the composition of end-to-end processes relying on these services.

## **BUSINESS NEEDS AND USER REQUIREMENTS CONCERNING**

The users are key factors for EAI accomplishment. Their requirements, based on business needs and business processes which should be integrated, determine the purpose of EAI and are used to model it. Process approach as a result has a models and business processes repository, that is, a knowledge base on the entire organization (Vidović & Galinec, 2003, p. 2). Transactions between business processes should be performed according to the security rules, based on real business needs. Experts developing EAI system should support transactions technologically, but must not define them or decide on them.

### **Ownership Over Processes, Responsibilities, and Process Steps**

There is defined ownership over processes in a business system. One owner can manage one or more roles which include respective responsibilities. Business process includes several process steps. Within roles one or more process steps can be made, as presented on workflow chart. Process application support should be provided for, from business needs and user requirements to the completion of the initiated process. Process steps which have been exercised within roles are not E2E, but workflow charts (relationship between E2E and workflow chart may be one-to-many, but one-to-one as well).

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